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habits of *Anopheles* mosquitoes are quite different from those of the genus *Culex*, and the figures illustrating the differences are very instructive. *Anopheles* larvæ inhabit mostly 'fairly permanent stagnant pools of water uninhabited by fish, but more or less covered with green scum.' Many other important and interesting new facts recorded in this portion of the bulletin cannot be mentioned in this brief review.

The three other genera of mosquitoes, *Psorophora*, *Megarhinus* and *Aedes*, found in the United States, are briefly discussed and the adult of one species in each genus is figured. The natural enemies of mosquitoes, such as dragon flies, water beetles larvæ, fish and birds, are succinctly discussed.

Nearly 16 pages of the bulletin are devoted to what is undoubtedly the best and fullest discussion of 'remedies against mosquitoes' in entomological literature. Dr. Howard's previous articles on the kerosene treatment of breeding places are condensed, and many suggestions from experience and from published records for preventing and alleviating mosquito bites are included. The effective methods of destroying the larvæ by the use of kerosene on the water, the proper drainage of the land, the practical use of fish, the agitation of the infested water are discussed in detail. Other unsuccessful experiments with larvicides, such as permanganate of potash and several proprietary mixtures are recorded. A most extensive series of experiments with culicidal mixtures made in Italy are briefly abstracted, and unsatisfactory experiments with tar and its compounds are given in detail. Some strong evidence is given to show that eucalyptus trees are valuable malarial deterrents. Still more evidence may be found in the writings of forestry experts who think that the planting of these trees in suitable regions may accomplish wonderful results in reducing malaria

either by drainage of the soil or by modifying the water so as to render it uninhabitable for mosquitoes. While it is true that the planting of eucalyptus trees is not a sovereign remedy, as Dr. Nuttall points out, for malaria still prevails at Tre Fontane, outside of Rome, in spite of the planting of these trees, I am told by a forestry expert who has visited this place that before the plantings it was utterly uninhabitable, while now monks and workmen live there, and malaria is much reduced.

The bulletin closes with a strong plea for 'drainage and community work,' and striking instances are given where wonderful results have been attained.

In an appendix is given a translation of Meinert's brief, earlier account of the larva of *Anopheles*, and several paragraphs of a very important report of the Malarial Expedition of the Liverpool School of Tropical Medicine which was received too late to incorporate in the body of the bulletin. In this latter report are recorded many important observations on the bionomics of *Anopheles* larvæ and adults.

From a popular, biologic or scientific standpoint, this bulletin on mosquitoes is a very important, instructive, interesting and useful addition to the world's entomological literature.

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SCIENTIFIC BOOKS.

The Norwegian North Polar Expedition, 1893-1896. Scientific Results. Edited by FRIDTJOF NANSEN. New York, Longmans, Green & Co. 1900. 4to. Pp. viii + 379, 46 plates.

In this sumptuous volume we have the first instalment of the scientific results of the celebrated North Polar expedition led by Dr. Nansen. The series is intended to contain a complete account of the scientific harvest of the expedition, and will doubtless form the standard work of reference for all scientific data of the North Polar basin for many years

to come. This volume is printed in Christiania and issued at the cost of the Nansen fund for the advancement of science. Large and thick as the volume is, the excellent paper used makes it light enough to handle with ease, while the typography and illustration are first class.

The work opens with an introduction by the editor in which the services of those who made the expedition possible are given due appreciation and grateful acknowledgment made of the enthusiastic devotion of the members of the party to their often multifarious labors. The absence of a detailed chart of the movements of the expedition is explained by the fact that the computation of the astronomical data is not yet fully completed and it was undesirable to delay the publication of memoirs ready for the press. The chart therefore will appear in the second volume. The various memoirs will be printed as soon as ready, each separately paginated but carrying a serial number by which it may easily be referred to.

Five memoirs appear in the present volume. The first, by Colin Archer, gives a full description of the construction of the *Fram* with diagrams. This will be of permanent value to those contemplating future exploration of the icy regions. The soundness of the theories upon which the vessel's construction was based is sufficiently proved by the fact that, after all her battles with the ice and other experiences, a careful survey showed that with the exception of the bending of one of the metallic fenders of the rudder, she had sustained no injury whatever.

While Nansen was enjoying the hospitality of Jackson at Cape Flora, he obtained a collection of invertebrate fossils from a stratum of clay below the basalt of the cape. This collection is very fully discussed by Dr. J. E. Pompeckj who finds the fauna to be of upper Jurassic age. A few plant remains were obtained from deposits occurring in depressions on the upper surface of the basalts. These are reported on by Nathorst who finds them to be probably of the uppermost Jurassic epoch. From these facts the basalts would appear to be also Mesozoic, though hitherto they had been supposed to be Tertiary. Robert Collett

and Nansen discuss the birds obtained by the expedition. Excluding those belonging to the fauna of the coast of Siberia, the bird life of the Polar Sea appears in this region to comprise but one land form, the snowbird (*Plectrophenax nivalis*), the rest being sea-fowl, gulls, auks, etc., of which thirty species were obtained. The rarest and most interesting of these is the rosy gull (*Rhodostethia rosea*). The ivory gull, the fulmar and the kittiwake were the most abundant. The food of the sea-fowl proved to be chiefly crustacea and small fish, obtained from cracks and water leads which occur in almost all the floes from time to time.

The last and most voluminous article is by Professor G. O. Sars, who describes the crustacea and illustrates them by a magnificent series of autotype plates which will call forth the admiration and gratitude of all carcinologists. Most of the crustacea are copepods, minute shrimps which serve as the chief food of the whale and sea-fowl. The westerly drift from the Siberian coast brings with it quantities of minute algæ and diatoms upon which the crustaceans subsist. They belong to the superficial stratum moved by the prevalent winds. Professor Sars, however, believes that the fauna of the deeper waters is derived from the Atlantic inflow below the superficial stratum. Among them it was a surprise to find, associated with strictly polar forms, several heretofore known only from the tropics, the Mediterranean and even the Caspian Sea. Very few marine animals except crustacea were found in the Polar basin. A tiny tomcod (*Gadus saida*) was the only fish observed in the high north.

The second volume will probably contain the astronomical, magnetic and pendulum observations, with charts and diagrams, discussed by Geelmuyden, Steen and Schiötz and may be expected to appear very soon.

W. H. DALL.

Biological Lectures from the Marine Biological Laboratory of Woods Holl. 1899. Boston, Ginn & Co. 1900. Pp. 282.

This annual, whose appearance is always awaited with interest, has enlarged its scope so that it no longer, as formerly, includes only lec-